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LAND RESOURCES: DEFORESTATION

Text submitted by the Chairman on the basis of preliminary discussions held on document A/CONF.151/PC/100/Add.16

Combating deforestation: options for Agenda 21

(Section II, Chapter 3 of Agenda 21)

Attached is the text of document A/CONF.151/PC/100/Add.16 as it has resulted from negotiations on 18 and 20 March 1992. The paragraphs in the introduction, basis for action and means for implementation have not yet been negotiated. Following the Chairman's proposal, programme area E on International and regional cooperation, included in document A/CONF.151/PC/100/Add.16, has been deleted.

INTRODUCTION

3. The proposed global objective of Agenda 21 on Forests could be **A/CONF.151/WG.I/CRP.13) "to achieve conservation and ensure sustainable management and sustainable development of all forests and tree-based resources to increase their contribution to overall socio-economic development, environmental protection and people's present and future quality of life."**

4. An important consideration, in the context of environment and sustainable development, is that the goods and services to be derived from trees, forests and forest lands are closely linked to areas covered in other sections of Agenda 21 such as those related to agriculture, mountain ecosystems, human settlements, land resources management, desertification control, oceans and

coastal areas, wildlife management, protection of fragile ecosystems, biodiversity, rural energy, freshwater resources, industrial needs and climate change. Neglecting trees, forests and forest lands will ultimately inflict serious negative impacts on the national human environment and its already fragile ecological and economic balance.

[4 bis In the developing countries the already ongoing Tropical Forestry Action Programme (TFAP) is the key instrument for achieving most of the objectives in the five programme areas. The TFAP is currently being implemented in more than 80 developing countries with the support of the international community.]

5. The activities outlined in this document are very closely related to, and have implications for, many of the programme areas described in other chapters, so an overall integrated approach is therefore necessary when addressing the following programme areas:

(a) Sustaining the multiple roles and functions of all types of forests, forest lands, and woodlands;

(b) Enhancement of the protection, sustainable management and conservation of all forests, and the greening of degraded areas through forest rehabilitation, afforestation, reforestation and other rehabilitative means;

(c) Promoting efficient utilization to recover the full valuation of the goods and services provided by forests, forest lands and woodlands;

(d) Establish and/or strengthen capacities for the planning, assessment and periodical evaluations of forest-related programmes progress, activities, including commercial trade and processes.

PROGRAMME AREAS

A. Sustaining the multiple roles and functions of all types of forests, forest lands, and woodlands

Basis for action

6. There are major weaknesses in the policies, methods and mechanisms adopted to support and develop the multiple ecological, economic, social and cultural roles of trees, forests and forest lands. In many countries, forest resources are being treated as free goods while in others they have been systematically depleted, impoverishing the quality of life of the people and restricting their options for development. In most developing countries, it is the lack of knowledge on the quality and quantity of forest resources which has led to the over-exploitation of the resource as these resources are normally seen as infinite. Many developed countries are confronted with the effects of air pollution and fire damage on their forests. More effective measures and approaches are often required at the national level to improve and harmonize policy formulation, planning and programming; legislative

measures and instruments; development patterns; participation of the general public, especially women; involvement of youth; roles of the private sector, local organizations, NGOs and cooperatives; development of technical and multidisciplinary skills and quality of human resources; forestry extension and public education; research capability and support; administrative structures and mechanisms, including intersectoral coordination, decentralization, and responsibility and incentive systems; dissemination of information and public relations. This is especially important to ensure a rational and holistic approach to a sustainable and environmentally sound development of forests. The need for securing the multiple roles of forests and forest lands through adequate and appropriate institutional strengthening has been repeatedly emphasized in many of the reports, decisions and recommendations by FAO, ITTO, UNEP, the World Bank, IUCN, and other organizations.

Objectives

7. Strengthen forest related national institutions, to enhance the scope and effectiveness of activities related to management, conservation and sustainable development of forests, and to effectively ensure sustainable utilization and production of forests' goods and services in both developed and developing countries. By the year 2000, strengthen the capacities and capabilities of national institutions to enable them to acquire necessary knowledge for the protection and conservation of forests as well as in expanding their scope and correspondingly enhancing effectiveness of programmes and activities related to management and development of forests.

8. Strengthen and improve human, technical and professional skills as well as expertise and capabilities to effectively formulate and implement policies, plans, programmes, research and projects on management, conservation and sustainable development of all types of forests and forest based resources, forest lands inclusive, as well as other areas from where forest benefits can be derived.

Activities

Management related:

9. Governments, at the appropriate levels, with the support of regional, sub-regional and international organizations, should enhance institutional capability to promote the multiple roles and functions of all types of forests and vegetation inclusive of other related lands and forest based resources in supporting sustainable development and environmental conservation in all sectors. This should be done wherever possible and necessary by strengthening and/or modifying the existing structures and arrangements, and improving cooperation and the coordination of their respective roles. Some of the major activities in this regard are:

(a) Rationalize and strengthen administrative structures and mechanisms, including provision of adequate levels of staff and allocation of responsibilities, decentralization of decision-making, provision of

infrastructural facilities and equipment, intersectoral coordination and an effective system of communication;

(b) Promote participation of the private sector, labour unions, rural cooperatives, local communities, indigenous people, youth, women, users groups and NGOs in forest related activities, and access to information and training programmes within the national context;

(c) Review and, if necessary, revise measures and programmes relevant to all types of forests and vegetation, inclusive of other related lands and forest based resources and relate them to other land uses and development policies and legislation; promote adequate legislation and other measures as a basis against uncontrolled conversion to other types of land uses;

(d) Develop and implement plans and programmes, including definition of national, and if necessary, regional and sub-regional goals, programmes and criteria for their implementation and subsequent improvement;

(e) Establish, develop and sustain an effective system of forest extension and public education to ensure better awareness, appreciation, and management of forests with regard to the multiple roles and values of trees, forests and forest lands;

(f) Establish and/or strengthen institutions and facilities for forest education and training as well as in forestry industries for developing an adequate cadre of trained and skilled staff at the professional, technical and vocational levels, with emphasis on youth and women.

(g) Establish and strengthen facilities and capabilities for research related to the different aspects of forests and forest products, for example on sustainable management of forests, research on biodiversity, on the effects of, and relations with the impact of climate change on forests, effects of acid rains, traditional uses of forest resources by local populations, and on improving market returns and other non-market values from the management of forests, etc.

Data and information

10. Governments, at the appropriate level, with the assistance and cooperation of international, regional, subregional and bilateral agencies should develop adequate database and baseline information necessary for planning and programme evaluation. The following are some of the more specific activities:

(a) Collect, compile and regularly update and distribute information on land classification and land use, including data on forest cover, areas suitable for afforestation, endangered species, ecological values, biomass and productivity and correlate demographic, socio-economic and forest resources information at micro- and macro-levels, and undertake periodic analysis of forest programmes;

(b) Establish linkages with other data systems and sources relevant to supporting forest management, conservation and development while further developing or reinforcing existing systems such as geographic information systems as appropriate;

(c) Create mechanism to ensure public access to this information.

International and regional cooperation and coordination:

11. Governments, at the appropriate level, and institutions should cooperate in the provision of expertise and funds, promote international research efforts, in particular with a view to enhancing transfer of technology and specialized training and ensuring access to experiences and research results. There is need for strengthening coordination and improving the performance of existing forest related international organizations in providing technical cooperation and support to interested countries for the management, conservation and sustainable development of forests.

Means of implementation

Financial and cost evaluation:

12. Annual estimated funding required to implement these activities is about US$ 2,500 million for the period 1993-2000. A major part required will need to be financed from national governments, the private sector and in some cases, NGOs.

13. The estimated amount of international financing required, annually, for developing countries has been estimated at US$ 860 million, of which US$ 840 million are related to accelerating development and US$ 20 million for strengthening the capacity of international institutions. Accelerating development would consist of implementing management-related and data/information activities listed above.

Scientific and technological means:

14. The planning, research and training activities specified will form the scientific and technological means for implementing the programme, as well as its output. The systems, methodology and know-how generated by the programme will help improve efficiency. Some of the specific steps involved should include:

(a) Analysis of achievements, constraints and social issues for supporting policy analysis, formulation and implementation;

(b) Analysis of research problems and research needs, research planning and implementation of specific research projects;

(c) Assessment of needs for human resources, skill development and training;

(d) Development, testing and application of appropriate methodologies/approaches in implementing forest policies, programmes and plans.

Human resources development:

15. The specific components of forest education and training will effectively contribute to human resources development. These include:

(a) Launching of graduate and post-graduate degree, specialization and research programmes;

(b) Strengthening of pre-service and in-service training programmes at the technical and vocational levels, including training of trainers/teachers, and developing curriculum and teaching materials/methods;

(c) Special training for staff of national forest related organizations in aspects such as project formulation, evaluation and periodical evaluations.

Capacity building:

16. This programme area is specifically concerned with capacity building in the forest sector and all programme activities specified contribute to that end. In building new and improved capacities, full advantage should be taken of the existing systems and experience.

B. Enhancement of the protection, sustainable management and conservation of all forests, and the greening of degraded areas, through forest rehabilitation, afforestation, reforestation and other rehabilitative means

Basis for action

17. Forests worldwide have been and are threatened by uncontrolled degradation and conversion to other types of land uses, influenced by increasing human needs; agricultural expansion; environmentally harmful mismanagement, which includes, for example, lack of adequate forest fire control and anti-poaching measures, unsustainable commercial logging, overgrazing and unregulated browsing, harmful effects of airborne pollutants, economic incentives and other measures taken by other sectors of the economy which may lead to accelerated deforestation and changes in climate. The impacts of loss and degradation of forests are in the form of soil erosion; loss of biological diversity, damage to wildlife habitat and degradation of watershed areas, deterioration of the quality of life and reducing the options for development.

18. The present situation calls for urgent and consistent action for the need to conserve and sustain forest resources. Greening of suitable areas, in all its component activities, is an effective way of increasing public awareness and participation in protecting and managing forest resources. It should

include the consideration of land use and tenure patterns and local needs and should spell-out and clarify the specific objectives of the different types of greening activities.

Objectives

19. Maintain existing forests through conservation and management, and sustain and expand areas under forest and tree cover, in appropriate areas of both developed and developing countries through conservation of native forests, protection, forest rehabilitation, regeneration, afforestation, reforestation, tree planting, with a view to maintaining or restoring the ecological balance and expanding their contribution to human needs and welfare.

[19 bis As appropriate prepare and implement National Forestry Action Programmes and/or plans for the management, conservation and sustainable development of forests. These plans and/or programmes should be integrated with other land-uses.]

20. Ensure the sustainable management, and where appropriate, conservation of existing and future forest resources.

21. Increase the ecological, biological, climatic, socio-cultural and economic contributions of forest resources.

Activities

Management related:

22. Governments should recognize the importance of categorizing forests, in the framework of long-term forest conservation and management policy, into different forest types and setting up sustainable units in every region/watershed with a view to securing the forest conservation. Governments, with the participation of the private sector, non-governmental organizations, local community groups, indigenous people, local government units and the public at large should act to maintain and expand the existing vegetative cover wherever ecologically, socially and economically feasible, through technical cooperation and other forms of support. Major activities to be considered are:

(a) Ensure a sustainable management of all forest ecosystems, including natural forest management and woodlands, through improved proper planning, management, and timely implementation of silvicultural operations, including inventory and relevant research as well as rehabilitation of degraded natural forests to restore productivity and environmental contributions giving particular attention to human needs for economic and ecological services, wood-based energy, agroforestry, non-timber forest products and services, watershed and soil protection, wildlife management, and forest genetic resources;

(b) Establish, expand and manage, as appropriate to each national context, Protected Area Systems, which includes systems of conservation units for their environmental, social and spiritual functions and values, including conservation of forests in representative ecological systems and landscapes, old-growth forests, conservation and management of wildlife, conservation of genetic resources involving in situ and ex situ measures and undertaking supportive measures to ensure sustainable utilization of biological resources and conservation of biological diversity and the traditional habitats of indigenous forest people;

(c) Undertake and promote buffer and transition zone management;

(d) Carry out revegetation in appropriate mountain areas, highlands, bare lands, degraded farm lands, arid and semi-arid lands and coastal areas for combating desertification and preventing erosion problems and for other protective functions and national programmes for rehabilitation of degraded lands, including community forestry, social forestry, agroforestry and silvopasture while also taking into account the role of forests as national carbon reservoirs and sinks;

(e) Develop industrial and non-industrial forestry plantations in order to support and promote national ecologically sound afforestation and reforestation/regeneration programmes in suitable sites, including up-grading of existing plantations of both industrial and non-industrial and commercial purpose to increase their contribution to human needs and natural forest preservation. Measures should be undertaken to promote and provide intermediate yields and to improve the rate of returns on investments in plantation, through interplanting and underplanting valuable crops in plantation;

(f) Develop/strengthen a national and/or master plan for forest plantations as a priority, indicating inter alia the location, scope, species, specifying area of existing plantation requiring rehabilitation, taking into account the economic aspect, for future plantation development giving emphasis to native species;

(g) Increase protection of forests from pollutants, fire, pests and diseases and other human-made interferences such as forest poaching, mining, and unmitigated shifting cultivation, introduction of exotic plant and animal species as well as develop and accelerate research for a better understanding of problems relating to the management and regeneration of all types of forests. Strengthen and/or establish appropriate measures to check inter-border movement of plants and related materials;

(h) Stimulate development of urban forestry for greening of urban, peri-urban and rural human settlements for amenity, recreation and production purposes and for protecting trees and groves;

(i) Launch or improve opportunities for involvement of all people, including youth, women, indigenous people and local communities in the

formulation, development and implementation of forest-related programmes and other activities taking due account of the local needs and cultural values;

(j) Limit and aim to halt destructive shifting cultivation by addressing the underlying social and ecological causes.

Data and information:

23. The management-related activities should involve collection, compilation and analysis of data/information, including baseline surveys. The following are some of the specific activities:

(a) Carry out surveys and develop and implement land use plans for appropriate greening/planting/afforestation/reforestation/forest rehabilitation;

(b) Consolidate and update land use and forest inventory and management information for management and land use planning of wood and non-wood resources, including data on shifting cultivation and other agents of forest destruction;

(c) Consolidate information on genetic resources and related bio-technology, including surveys and studies as necessary;

[(cbis) Carry out surveys and research on local/indigenous knowledge of trees and forests and their uses to improve the planning and implementation of sustainable forest management;]

(d) Compile and analyse research data on species/site interaction of species used in forest plantations and assess the potential impact on forests of climatic change as well as effects of forests on climate, and initiate in-depth studies on the carbon cycle relating to different forest types to provide scientific advice and technical support;

(e) Establish linkages with other data/information sources that relate to sustainable management and use of forests and improve access to data and information;

(f) Develop and intensify research to improve knowledge and understanding of problems and natural mechanism related to the management and rehabilitation of forests, including research on fauna and its interrelation with forests;

(g) Consolidate information on forest conditions and site-influencing immissions and emissions.

International and regional cooperation and coordination:

24. Greening of appropriate areas is a task of global importance and impact. The international and regional community should provide technical cooperation and other means for this programme. Specific activities of international nature, in support of national efforts, should include the following:

(a) Increase cooperative actions to reduce pollutants and trans-boundary impacts affecting the health of trees and forests and conservation of representative ecosystems;

(b) Coordinate regional and subregional research on carbon sequestration, air pollution and other environmental issues;

(c) Document and exchange information/experience for the benefit of countries with similar problems and prospects;

(d) Strengthen the coordination and improve the capacity and ability of intergovernmental organizations such as FAO, ITTO, UNEP, UNESCO, to provide technical support for the management, conservation and sustainable development of forests.

Means of implementation

Financial and cost evaluation:

25. The estimated annual financing required to implement these activities is about US$ 10 billion for the period 1993-2000. Of this amount about US$ 3.7 billion in international financing will be needed for developing countries. From that amount US$ 3,510 million are related to accelerating development; US$ 150 million are needed for global environmental issues and US$ 20 million for strengthening the capacity of international institutions.

Scientific and technological means:

26. Data analysis, planning, research, transfer/development of technology and/or training activities form an integral part of the programme activities, providing the scientific and technological means of implementation. National institutions should:

(a) Develop feasibility studies and operational planning related to major forest activities;

(b) Develop and apply environmentally sound technology relevant to the various activities listed;

(c) Increase action related to genetic improvement and application of biotechnology for improving productivity and tolerance to environmental stress and including, for example, tree breeding, seed technology, seed procurement networks, germplasm banks, "in vitro" techniques, in situ and ex situ conservation.

Human resources development:

27. Essential means for effectively implementing the activities include training and development of appropriate skills, working facilities and conditions, public motivation and awareness. Specific activities include:

(a) Provide specialized training in planning, management, environmental conservation, biotechnology, etc;

(b) Establish demonstration areas to serve as models and training facilities;

(c) Support local organizations, communities, NGOs, private land owners, in particular women, youth, farmers and indigenous people/shifting cultivators, through extension, provision of inputs and training.

Capacity building:

28. The national Governments, the private sector, local organizations/communities, labour unions and NGOs should develop capacities, duly supported by relevant international agencies, to implement the programme activities. Such capacity should be developed and strengthened in harmony with the programme activities. Capacity-building activities include policy and legal frameworks, national institution building, human resource development, development of research and technology, development of infrastructure, enhancement of public awareness, etc.

C. Promoting efficient utilization and assessment to recover the full valuation of the goods and services provided by forests, forest lands and woodlands

Basis for action

29. The vast potential of forests and forest lands as a major resource for development is not yet fully realized. Improved management of forests can increase the production of goods and services and in particular the yield of wood and "Non-Wood Forest Products", thus helping generate additional employment and income, addition of value through processing and trade of forest products, increase contribution to foreign exchange earnings, and increase return on investment. Forest resources, being renewable, can be sustainably managed in a manner that is compatible with environmental conservation. It is also possible to increase the value of forests through "non-damaging" uses such as eco-tourism and managed supply of genetic materials. There is need for concerted action in order to increase people's perception of the value of forests and of the benefits they provide. The survival of the forests and their continued contribution for human welfare depends highly on succeeding in this endeavour.

Objectives

30. Improve recognition of the social, economic and ecological values of trees, forests and forest lands including the consequences of the damage caused by the lack of forest. Promote methodologies in view to incorporate social, economic and ecologic values of trees, forest and forest lands into the national economic accounting systems. Ensure their sustainable management in a way which is consistent with land use, environmental considerations and development needs.

31. Promote efficient, rational and sustainable utilization of all types of forests and vegetation inclusive of other related lands and forest-based resources, including through the development of efficient forest-based processing industries, value-adding secondary processing and trade in forest products, based on sustainably managed forest resources and in accordance with plans which integrate all wood and non-wood values of forests.

[31 bis Promote more efficient and sustainable use of forest and trees for fuelwood and energy supply.]

[31 ter Promote more comprehensive use and economic contributions of forest areas by incorporating eco-tourism into forest management and planning.]

Activities

Management related:

32. Governments, the private sector, scientific institutions, NGOs, cooperatives and entrepreneurs should undertake the activities below, properly coordinated at the national level along with financial and technical cooperation from international agencies. Major activities to be considered are:

(a) Carry out detailed investment studies, supply-demand harmonization and environmental impact analysis to rationalize and improve trees and forest utilization and to develop and establish appropriate incentive schemes and regulatory measures, including tenurial arrangements, to provide a favourable investment climate and promote better management;

(b) Formulate scientifically sound criteria and guidelines for the management, conservation and sustainable development of all types of forests;

(c) Improve environmentally sound methods and practices of forest harvesting which are ecologically sound and economically viable, including planning and management, improved use of equipment, storage and transportation to reduce and if possible maximize the use of waste, and improve value of both wood and non-wood forest products;

(d) Promotion of a better use and development of natural forests and woodlands, including forest plantations, wherever possible, through

appropriate and environmentally sound and economically viable activities including silvicultural practices and management of other plant and animal species;

(e) Promote and support the downstream processing of forest products to increase retained value and other benefits;

(f) Promote/popularize non-wood forest products and other forms of forest resources, apart from fuelwood (e.g. medicinal plants, dyes, fibres, gums, resins, fodder, cultural products, rattan, bamboo etc.) through programmes and social forestry/participatory forest activities, including research on their processing and uses;

(g) Develop, expand and/or improve effectiveness and efficiency of forest-based processing industries, both wood and non-wood based, involving such aspects as efficient conversion technology and improved sustainable utilization of harvesting and process residues; promotion of underutilized species in natural forests through research, demonstration and commercialization; promotion of value-adding secondary processing for improved employment, income and retained value; and promotion/improvement of markets for, and trade in, forest products through relevant institutions, policies and facilities.

(h) Promote and support the management of wildlife, including farming, as well as to encourage and support the husbandry and cultivation of wild species (e.g. for food, hides and skin, bones and horns, eco-tourism, etc.), for improved rural income and employment, ensuring economic and social benefits without harmful ecological impacts;

(i) Promote appropriate small-scale forest-based enterprises for supporting rural development and local entrepreneurship;

(j) Improve and promote methodologies for the comprehensive assessment that will capture the full value of forests with a view to including this value in the market-based pricing structure of wood and non-wood based products;

(k) Harmonize sustainable development of forests with national development and trade policies which are compatible with the ecologically sound use of forest resources, using for example the ITTO Guidelines for Sustainable Management of Tropical Forests;

(l) Develop, adopt and strengthen national programmes for accounting the economic value of forests.

Data and information:

33. The objectives and the management related activities presuppose data and information analysis, feasibility studies, market surveys and review of technological information. Some of the relevant activities include:

(a) Undertake analysis of supply and demand for forest products and services, to ensure efficiency in their utilization, wherever necessary;

(b) Carry out investment analysis and feasibility studies, including environmental impact assessment, for establishing forest-based processing enterprises;

(c) Conduct research on the properties of currently underutilized species for their promotion and commercialization;

(d) Support market surveys of forest products for trade promotion and intelligence;

(e) Facilitate the provision of adequate technological information as a measure to promote better utilization of forest resources.

International and regional cooperation and coordination:

34. Cooperation and assistance of international agencies and the international community in technology transfer, specialization, and promotion of fair terms of trade, without resorting to unilateral restrictions and/or bans on forest products contrary to GATT agreements, the application of appropriate market mechanisms and incentives will help in addressing global environmental concerns. Strengthening of the coordination and performance of existing international organizations and in particular FAO, UNIDO, UNESCO, UNEP, ITC/UNCTAD/GATT, ITTO and ILO for providing technical assistance and guidance in this programme area is another specific activity.

Means of implementation

Financial and cost evaluation:

35. Estimated annual financing required to implement the programme activities is about US$ 18 billion, for the period 1993-2000. The bulk of it is expected to be invested by the private sector. Part of it will also be invested by the national governments. Smaller investments will come from cooperatives and households. International assistance will, however, act as a catalyst and stimulant to promote development.

36. The amount of international financing, required annually by developing countries has been estimated at US$ 880 million of which US$ 660 million are related to accelerated development; US$ 200 million for global environmental issues and US$ 20 million for strengthening the capacity of international organizations.

Scientific and technological means:

37. The programme activities pre-suppose major research efforts and studies as well as improvement of technology. This should be coordinated by national governments in collaboration with, and supported by, relevant international agencies and institutions. Some of the specific components include:

(a) Research on properties of wood and non-wood products and on their uses, to promote improved utilization;

(b) Development and application of environmentally sound and less-polluting technology for forest utilization;

(c) Models and techniques of outlook analysis and development planning;

(d) Scientific investigations on the development and utilization of non-timber forest products;

(e) Appropriate methodologies to comprehensively assess the value of forests.

Human resources development:

38. The success and effectiveness of the programme depends on availability of skilled personnel. Specialized training is an important factor in this regard. New emphasis should be given to the incorporation of women. Human resource development for programme implementation, in quantitative and qualitative terms should include:

(a) Develop the required specialized skills to implement the programme, including establishment of special training facilities at all levels;

(b) Introduce/strengthen refresher training courses, including fellowships and study tours, to update skills and technological know-how and improve productivity;

(c) Strengthen capability for research, planning, economic analysis, periodical evaluations and evaluation, relevant to improved utilization of forest resources;

(d) Promote efficiency and capability of private and cooperative sectors through provision of facilities and incentives.

Capacity building:

39. Capacity building, including strengthening of existing capacity, is implicit in the programme activities. Improving administration, policy and plans, national institutions, human resources, research and scientific capabilities, technology development, and periodical evaluations and evaluation are important components of capacity building.

D. Establish and/or strengthen capacities for the planning, assessment and periodical evaluations of forests and related programmes, progress, activities, including commercial trade and processes

Basis for action

40. Assessment and periodical evaluations are essential components of long-term planning, for evaluating effects, quantitatively and qualitatively, and for rectifying inadequacies. This mechanism, however, is one of the often neglected aspects of forest resources, management, conservation and development. In many cases, even the basic information related to the area and types of forests, existing potential and volume of harvest etc. is lacking. In many developing countries, there is a lack of structures and mechanisms to carry out these functions. There is an urgent need to rectify this situation for a better understanding of the role and importance of forests and to realistically plan for their effective conservation, management, regeneration, sustainable development.

Objectives

41. Strengthen or establish systems for the assessment and periodical evaluations of forest and forest lands with a view to assessing the impacts of programmes, projects and activities on the quality and extent of forest resources, land available for afforestation, land tenure, and to integrate the systems in a continuing process of research and in-depth analysis, while ensuring necessary modifications and improvements for planning and decision-making process. Specific emphasis should be given to the participation of the rural people in these processes.

42. Provide the economic operators, planners, decision makers and local communities with sound and updated adequate information on forest and forest land resources.

Activities

Management related:

43. Governments and institutions in collaboration, where necessary, with appropriate international agencies and organizations, universities and NGOs, should undertake assessments and periodical evaluations of forests and related programmes and processes with a view to their continuous improvement. This should be linked to related activities of research and management and, wherever possible, be built upon existing systems. Major activities to be considered are:

(a) Assess and periodically evaluate the quantitative and qualitative situation and changes of forest cover and forest resources endowments, including land classification, land use and its status updates, at the

appropriate national level, and link this activity, as appropriate, with planning as a basis for policy and programme formulation;

(b) Establish national assessment and periodical evaluations systems and evaluation of programmes and processes, including establishment of definitions, standards, norms, and intercalibration methods, and capability for initiating corrective actions as well as improving formulation and implementation of programmes and projects;

(c) Make estimates of impacts of activities affecting forestry developments and conservation proposals, in terms of key variables such as developmental goals, benefits and costs, contributions of forests to other sectors, community welfare, environmental conditions and biological diversity and their impacts at the local, regional and global levels where appropriate, to assess the changing needs of countries;

(d) Carry out studies and investigations regarding influence of forests on carbon storage, climatic changes, greenhouse gases, etc., and on the effects of those processes on trees and forests;

(e) Develop national systems of forest resource assessment and valuation, including necessary research and data analysis, which account for, where possible, the full range of wood and non-wood forest products and services, and incorporate results in plans and strategies and, where feasible, in national systems of accounts and planning;

(f) Establish necessary inter-sectoral and programme linkages, including improved access to information in order to support a holistic approach to planning and programming.

Data and information:

44. Reliable data and information are vital to this programme. The national Governments, in collaboration, where necessary, with relevant international agencies, should, as appropriate, undertake to continuously improve data and information and ensure its exchange. Major activities to be considered are:

(a) Collect, consolidate and exchange existing information and establish baseline information on aspects relevant to this programme;

(b) Harmonize the methodologies for programmes involving data and information activities to ensure accuracy and consistency;

(c) Undertake special surveys on, for example, land capability and suitability for afforestation action;

(d) Enhance research support and improve access to and exchange of research results.

International and regional cooperation and coordination:

45. The international community should extend to the Governments concerned necessary technical and financial support for implementing this programme, including the following:

(a) Establish conceptual framework and formulate acceptable criteria, norms and definitions for periodical evaluations and assessment of forest resources;

(b) Establish national institutional coordination mechanisms for forest assessment and periodical evaluations activities;

(c) Strengthen existing regional and global networks for exchange of relevant information where existing mechanisms cannot be strengthened to perform the task;

(d) Strengthen the capacity of existing international organizations such as FAO, ITTO, UNEP, UNESCO and UNIDO to provide technical support and guidance in this programme area.

Means of implementation

Financial and cost evaluation:

46. Estimated annual financing required to implement the activities is about US$ 750 million for the period 1993-2000. About 70 per cent of the required financing will come from national governments and from the private sector. The amount of annual international financing required, by developing countries has been estimated at US$ 230 million, of which US$ 180 million are related to accelerating development, US$ 30 million for global environmental issues and US$ 20 million for strengthening the capacity of international organizations.

47. Accelerating development consists of implementing the management-related and data/information activities cited above. Activities related to global environment issues are those which will contribute to the global information for assessing/evaluating/addressing environmental issues on worldwide basis. Strengthening the capacity of international institutions consists of enhancing the technical staff and the executing capacity of several international organizations in order to meet the requirements of countries.

Scientific and technological means:

48. Assessment and periodical evaluations activities involve major research efforts, statistical modelling and technological innovation. These have been internalized into the management-related activities. The activities in turn will improve the technology and scientific content of assessment and periodical evaluations. Some of the specific scientific and technological components included under the activities are:

(a) Development of technical, ecological and economic methods and models related to periodical evaluations and evaluation;

(b) Development of data systems, data processing and statistical modelling;

(c) Remote sensing and ground surveys;

(d) Development of Geographic Information Systems (GIS);

(e) Assessment and improvement of technology.

49. These are to be linked and harmonized with similar activities and components in the other programmes.

Human resources development:

50. The programme activities foresee the need, and include provision for human resource development in terms of specialization (e.g. the use of remote sensing, mapping, statistical modelling), training, technology transfer, fellowships, and field demonstrations.

Capacity building:

51. The national governments in collaboration with appropriate international agencies and institutions should develop the necessary capacity for implementing this programme. This should be harmonized with capacity building for other programmes. Capacity building should cover such aspects as policies, public administration, national level institutions, human resource and skill development, research capability, technology development, information system, programme evaluation, intersectoral coordination and international cooperation.

52. Funding of international and regional cooperation. The estimated investment required annually to implement international and regional cooperation is estimated at about US$ 750 million, for the period 1993-2000. Nearly 70 per cent of the required financing would come from international sources. The amount of international financing required annually has been estimated to be US$ 530 million of which US$ 430 million are related to accelerating development; US$ 80 million for global environmental issues and US$ 20 million for strengthening the capacity of international organizations.